

CLAIMS:

1. A composting system incorporating a vertical insulated composting tower with one or more chambers, the base of each chamber being fitted  
5 with a plenum and grate through which air is induced and output is daily removed.
2. A composting system as claimed in claim 1 wherein operation is continuous and operates on a plug flow principle using controlled  
10 shrinkage of biomass materials during their descent through the vertical chamber.
3. A composting system as claimed in claim 1 or claim 2 wherein a second chamber if included is used for compost maturation and operates in the  
15 same manner as the first chamber.
4. A composting system as claimed in claim 3 which is of modular configuration with units which can be run in parallel or series with one feed system.  
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5. A composting system as claimed in any one of the preceding claims wherein the base of each chamber is fitted with a plenum and grate system to control air injection and removal of daily output.
- 25 6. A composting system as claimed in any one of the preceding claims wherein retained pile energy induces air intake above stoichometric levels.

7. A composting system as claimed in any one of the preceding claims  
which a naturally induced excess air rate and evolved gas is controlled by  
a fan with integral condenser/scrubber for condensate removal and odour  
control assurance.
8. A composting system as claimed in any one of the preceding claims  
wherein the insulated composting tower incorporating the thermic pile is  
held clear of the ground, freely allowing air induction through the base of  
the tower at rates close to the metabolic requirement of the bacteria in  
the pile.
9. A composting system as claimed in claim 8 wherein the composting  
tower is mounted on a plinth, open-ended supporting structure or over an  
open cavity.
10. A composting system as claimed in any one of the preceding claims  
which is weather sealed and vermin proof.
11. A composting system as claimed in any one of the claims 3 to 10 which  
is modular so that one chamber feeds another for purposes of compost  
maturation.
10. A composting system as claimed in any one of the preceding claims  
which includes a gated walking floor or other discharge mechanism which  
passes material down from processing in a controlled daily cycle.

13. A method of composting biodegradable waste material utilising a plug  
flow principle including:
- inducing low air flow rates through a compost pile using column  
energy;
  - utilising high temperature pyro/thermopylic micro-organism activity  
in the compost pile;
  - retaining pile energy above stoichiometric levels by controlling the  
induced air flow;
  - utilising evolved gas extraction in the compost pile;
  - maintaining constant biofilm maintenance by combined  
anaerobic/aerobic operation; and
  - removing the biomass material at regular intervals.
14. A method as claimed in claim 13 which includes retaining a naturally  
induced excess air rate and evolved gas by controlling by a fan with  
integral condenser/scrubber for condensate removal and odour control  
assurance.
15. A method as claimed in claim 13 or claim 14 wherein the biomass  
material requires no agitation.
16. A method as claimed in any one of claims 13 to 15 including the step of  
maintaining an active moisture bound biofilm from input to output  
(typically 45-50% w/w) which prevents the possibility of pyrolysis and  
encourages microbe activity.

17. A method as claimed in any one of claims 13 to 15 wherein the low air flow reduces the cooling effect of incoming air in the bottom layers giving high efficiency for effective working heights.
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18. A method as claimed in any one of claims 13 to 17 and substantially as hereinbefore described.
- 10 19. A composting system as claimed in claim 1 and substantially as hereinbefore described with reference to the accompanying drawings.